

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRIMARY WATER TANK ASSEMBLY #1 #2, ITEM 131, ITEM 162 ----- SV769592-30 (1)	2/1R	131FM03 External leakage, gas. Seal failure, tank corrosion.	END ITEM: Suit gas leakage to ambient. GFE INTERFACE: Excessive consumption of the primary oxygen supply. The SOP is automatically activated during EVA if the suit pressure drops to 3.33 psid. MISSION: Terminate EVA. Loss of use of one EMU. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - The perimeter of the fluorel bladder opening has the D-Ring molded on the bladder to perform the sealing function. The sealing concept is the same as that of a standard face type O-seal, consisting of an elastomeric ring compressed and retained between smooth flat surfaces. Radial seals (silicone) and face seals (viton) are also utilized and their dimensions and rigidity of assembly provide squeeze under all tolerance conditions. The cavities, bores, and D-seal areas of the structure are now coated with a corrosion inhibiting coating (BR127). B. Test - Component Acceptance Test Per AT-E-131-2 - The item is external leakage tested by pressurizing the item (gas side and H2O side) with 15.4-15.6 psig nitrogen. The leakage as measured with a volumetric micrometer for 10 minutes shall be 0.5 scc/min N2 max. PDA Test Per SEMu-60-010, Para. 16.2 - The primary oxygen tanks are charged with 2% GHe and 98% GN2 to a pressure of 850-950 psia. The test port housing and water tank structure are sniffed for leakage with a helium leak detector. leakage is defined as a level change in meter reading for 5 seconds minimum. Certification Test - Certified for a useful life of 25 years (ref. EMUM1-0106). C. Inspection - The sealing interfaces between the bladder covers and the water tank, the various bores the mating tubes, and the tank pressure transducer mounting pad are 100% inspected to meet dimensional and surface finish requirements. The D-seal area of the bladder is 100% inspected for surface defects per the SV798853, SV798854 and SV798855 drawings. The seal area is also 100% inspected to meet dimensional requirements. The corrosion inhibiting coating is qualified for each tank by testings panels that were prepared with that tank to meet the coating specification requirements. All surface coated are 100% visually inspected to verify specification compliance. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Final SEMU Gas Structural and Leakage. None for EET processing. F. Operational Use - Crew Response - PreEVA: No response, single failure unlikely to be detected by crew or ground. EVA: When CWS data confirms an accelerated primary O2 use rate, terminate EVA. Training - Standard EMU covers this failure mode. Operational Considerations - Flight rules define go/no go criteria related to EMU suit pressure control. Consider periodic vacuum O2 recharge to recover EMU operation. EVA checklist procedures verify hardware integrity and systems

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131FM03

operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-131 PRIMARY WATER TANK ASSEMBLY
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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